

CLAIMS

1. A protein having an activity of degrading a dsRNA, which has an activity of acting on a dsRNA to produce a dsRNA of a specific length.
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2. The protein according to claim 1, which has a functional domain of a Dicer.
3. The protein according to claim 2, wherein the functional domain of a Dicer consists of RNase IIIa, RNase IIIb and dsRNA-binding domains.
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4. The protein according to claim 3, which further contains a PAZ domain.
5. The protein according to claim 1, wherein the dsRNA of specific length is a dsRNA of about 15 to 30 base pairs.
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6. The protein according to claim 1, which is a protein consisting of the amino acid sequence of SEQ ID NO:4 or 17, or an amino acid sequence encoded by the nucleotide sequence of SEQ ID NO:3 or 16.
7. The protein according to claim 1, which is a protein consisting of an amino acid sequence in which one or plural amino acid(s) is(are) substituted, deleted, inserted or added in the amino acid sequence of SEQ ID NO:4 or 17.
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8. A method for producing the protein having an
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activity of degrading a dsRNA defined by claim 1, the method comprising converting a codon into one that is suitable for expression in a host, or reinforcing a host to be used for a rare codon.

5 9. A method for producing the protein having an activity of degrading a dsRNA defined by claim 1, the method comprising expressing the protein using a cold-inducible vector.

10 10. A kit containing the protein having an activity of degrading a dsRNA defined by claim 1.

15 11. A method for degrading a dsRNA, the method comprising allowing a protein having an activity of degrading a dsRNA to act on a dsRNA in the presence of a protein having an activity of binding to a nucleic acid to produce a dsRNA of a specific length.

12. The method according to claim 11, wherein the protein having an activity of binding to a nucleic acid and the protein having an activity of degrading a dsRNA are a fusion protein.

20 13. The method according to claim 11, wherein the protein having an activity of binding to a nucleic acid is a protein having an activity of binding to an RNA.

25 14. The method according to claim 13, wherein the protein having an activity of binding to an RNA is a cold shock protein.

15. The method according to claim 14, wherein the cold shock protein is derived from a thermophilic bacterium or a thermostable bacterium.

5 16. The method according to claim 15, wherein the cold shock protein is cold shock protein B from *Thermotoga maritima*.

17. The method according to claim 11, wherein the dsRNA of specific length is a dsRNA of about 15 to 30 base pairs.

10 18. The method according to claim 11, wherein the protein having an activity of degrading a dsRNA is the protein defined by any one of claims 1 to 7.

15 19. The method according to claim 11, wherein the protein having an activity of degrading a dsRNA is a native Dicer or a functional equivalent thereof.

20 20. A method for synthesizing an RNA, the method comprising conducting an RNA synthesis reaction using a protein having an activity of synthesizing an RNA in the presence of a protein having an activity of binding to a nucleic acid.

21. The method according to claim 20, wherein a fusion protein of the protein having an activity of binding to a nucleic acid and the protein having an activity of synthesizing an RNA is used.

25 22. The method according to claim 20, wherein

the protein having an activity of binding to a nucleic acid is a cold shock protein.

23. The method according to claim 22, wherein the cold shock protein is derived from a thermophilic bacterium or a thermostable bacterium.

24. The method according to claim 23, wherein the cold shock protein is cold shock protein B from *Thermotoga maritima*.

25. The method according to claim 20, wherein the protein having an activity of synthesizing an RNA is a DNA-dependent RNA polymerase.

26. A composition used for the method defined by claim 11, the composition containing a protein having an activity of binding to a nucleic acid and a protein having an activity of degrading a dsRNA.

27. A kit used for the method defined by claim 11, the kit containing a protein having an activity of binding to a nucleic acid and a protein having an activity of degrading a dsRNA.

28. A composition used for the method defined by claim 20, the composition containing a protein having an activity of binding to a nucleic acid and a protein having an activity of synthesizing an RNA.

29. A kit used for the method defined by claim 20, the kit containing a protein having an activity of

binding to a nucleic acid and a protein having an activity of synthesizing an RNA.